Appendix 3
Study Objectives and Tasks from the RFP for the
Preston Area and Sandy Lake Watershed Studies

4.0 PROJECT OBJECTIVE

Complete the project on time and on budget using sound project management principles.

5.0 DETAILED SCOPE OF CONSULTING SERVICES

The Regional Planning Strategy requires that watershed studies be undertaken as a prerequisite to more detailed secondary planning. As required by Regional Plan Policy E-17, the studies shall be designed to:

Watershed or sub-watershed studies concerning natural watercourses shall be carried out as part of comprehensive secondary planning processes. These studies shall determine the carrying capacity of the watersheds to meet the water quality objectives which shall be adopted following the completion of the studies. The studies, where appropriate, shall be designed to:

(a) recommend measures to protect and manage quantity and quality of groundwater resources;

- At a broad scale, the study should identify and provide recommendations on development opportunities, constraints and appropriate mitigations in relation to groundwater resources. The study shall identify preferred locations for development and appropriate densities for development based on groundwater recharge potential and the potential for yield and quality to sustain development.

(b) *recommend water quality objectives for key receiving watercourses in the study area;*

- These recommendations are to be based on current water quality status and water quality objectives stated within the Regional Plan

(c) determine the amount of development and maximum inputs (of total phosphorus, bacteria and suspended solids) that receiving lakes and rivers can assimilate without exceeding the water quality objectives recommended for the lakes and rivers within the watershed;

(d) determine the parameters to be attained or retained to achieve marine (sic) water quality objectives;

- It is intended that future growth within Sandy Lake will be accommodated through central water and sewer services. A stormwater management plan will be developed by the property owner for approval by Halifax Water, in accordance with its Design and Construction Specifications guide book for the applicable calendar year. No analysis of water or wastewater servicing options is required in this area.
- Future growth in the East Preston / Cherry Brook / Lake Loon Centre may be accommodated through on-site well water as well as individual wastewater management systems. No servicing study shall be conducted for this area. However, pursuant to Policy SU-14 in the Regional Plan (see bottom of this Memorandum), the municipality is seeking advice on whether there are water quality and/or water quantity problems in the Centre and in the community of East Preston and the developed portions of the Lake Loon and Cherry Brook Communities that are adjacent to the current Water Service Areas that are on private wells.

- The consultant shall undertake well sampling and analysis for a representative sample of households throughout the Centre and East Preston and the developed portions of the Lake Loon and Cherry Brook Communities that are adjacent to the current Water Service Areas that are on private wells. Sample collection is intended to ensure a scientifically and statistically reliable representation of well water quality and quantity in the targeted communities, and therefore the number of samples to collect will be determined by the Proposer, in consultation with the Steering Committee. Samples should be analyzed for those parameters identified by the consultant as important to public health. These are anticipated as follows: Total coliforms and E. Coli, Standard Water Analysis + Metals Scan. This well analysis shall not include any pump tests.

- Future growth in the North Preston area will be accommodated through central water and wastewater services, which are already operating within the community. No analysis of water or wastewater servicing options is required in this area.

- The consultant must identify key lakes & rivers within the study areas for which water quality objectives have been set (as per clause b above) and determine the maximum amount of inputs these water bodies can assimilate without exceeding those water quality objectives.

- Water quality samples should be taken from selected locations for a minimum of three seasons (spring, summer, fall) beginning with the spring turnover to determine baseline conditions. For key freshwater bodies in both study areas, use standard methods such as lake phosphorus modeling to assess assimilative capacity. Recommendations of Total Phosphorus objectives based on this work should be in accordance with the CCME Framework for Phosphorus Management. Recommendations should also address other parameters considered problematic within the study area, and identify the maximum density of developments that may be accommodated within the area of freshwater bodies that is likely to contribute significantly to phosphorus loading. Water quality testing shall also include metals that may undermine desired water quality objectives recommended under this study for all key receiving waters. Low level detection limits of 2 micrograms per Litre shall be used for laboratory analysis of total phosphorus, and E. Coli is the parameter to be used for investigation of bacteria.

(e) identify sources of contamination within the watershed (study areas);

- identify and catalog existing known and suspected sources of contamination including malfunctioning septic systems based on all available information

(f) identify remedial measures to improve fresh and marine water quality;

(g) recommend strategies to adapt HRM's stormwater management guidelines to achieve the water quality objectives set out under the watershed study

(h) recommend methods to reduce and mitigate loss of permeable surfaces, native plants and native soils, groundwater recharge areas, and other important environmental functions within the watershed and create methods to reduce cut and fill and overall grading of development sites;

(i) identify and recommend measures to protect and manage natural corridors and critical habitats for terrestrial and aquatic species, including species at risk;

(j) identify appropriate riparian buffers for the watershed;

- Also recommend site-specific riparian buffers in areas that require a higher degree of protection than provided for in the Regional Plan.

(k) identify areas that are suitable and not suitable for development within the watershed;

- These are to be based on recommended water quality objectives, receiving water constraints, critical habitats, groundwater resources and potential central water supply, floodplains or other constraints identified within the watershed study area and the opportunities for water and wastewater services. The Consultant shall provide details regarding their recommendations for the land's capacity for development and identify areas of land that are suitable for development of certain types, areas that are not suitable for development, and lands that may be suitable for development under certain conditions. Data analysis and rationale are required as part of the explanation for these recommendations.

(l) recommend potential regulatory controls and management strategies to achieve the desired objectives for small scale wastewater management. considering the jurisdiction and scope of municipal authority under the Halifax Regional Municipality Charter and other relevant legislation, and scope for action under the Regional Plan and secondary municipal planning strategies, identify areas that should be included within a Wastewater Management District for those areas that may be serviced by shared septic systems within the study areas and recommend best available technology for shared septic systems.

(m) recommend a monitoring plan to assess if the specific water quality objectives for the watershed are being met.

- From 2006-2011 the Municipality operated a lake-based water quality monitoring program. A developer-funded site-specific water quality monitoring program was also established in 2006 in association with specific development proposals. HRM received a report recommending a water quality monitoring policy in 2010; that report is accessible at http://www.halifax.ca/environment/documents/HRM.Water.Quality.Monitoring.Functional.Plan.Jan2010.pdf

The Sandy Lake lands are within the Sackville River Watershed (see Map 1, Appendix E) and the Preston Area lands are within the Little Salmon River & Partridge River – Lawrencetown Lake Watershed systems (see Map 2, Appendix E).

The study scope identified above addresses matters specifically identified in Policy E-17 of the Regional Planning Strategy. In addition to those matters, the following specific tasks are to be undertaken:

A. Meet with the respective organizations for each watershed study, in separate meetings, to identify the project, explain the work to be undertaken and to hear any concerns or issues arising from the presentation and associated work

plan.

i. For the Sandy Lake Watershed Study, two presentations shall be given at public meetings with residents / representatives of the affected area to be identified by HRM's Project Manager. The first presentation will be held at the earliest mutual opportunity of these organizations and the consultant and its purpose will be to identify and describe the project and request input from these organizations and others in attendance. The second presentation will occur after the draft preliminary report has been developed and submitted to HRM, to report upon the findings made and receive further comments from those in attendance.

ii. In the Preston Area Watershed Study, a minimum of two presentations shall be given at public meetings with residents / representatives of the study area to be identified by HRM's Project Manager. HRM will actively participate in the engagement of these groups. The first presentation will be held at the earliest mutual opportunity of these organizations and the consultant, and its purpose will be to identify and describe the project and request input from these organizations and others in attendance. The second presentation will occur after the draft preliminary report has been developed and submitted to HRM, to report upon the findings made and receive further comments from those in attendance.

B. Prepare a draft preliminary report for each study area with recommended water quality objectives for key receiving watercourses. Each report is to explain the criteria for the recommendations and will be presented at 1) a joint public meeting of the bodies identified in task A, above, and at a meeting of HRM Council for an endorsement of the recommendations. Separate public meetings will be scheduled for each watershed study and it should be assumed that separate presentations to Council will be required. Following each presentation at the public meeting, the Proponent will be expected to respond to questions arising and consider revisions based on the comments received which are to be incorporated into the preliminary final report to Council.

C. Review existing water quality data available and undertake a sampling program needed to establish a reliable and accurate baseline of the water quality in key receiving water courses.

D. Undertake spatial modeling utilizing HRM LiDAR data for each watershed. The Proponent will use the data to develop an ArcGIS 9.3 Digital Surface Model (DSM) of each watershed. Further modeling will include the following tasks: watershed delineation including identification of vernal ponds, wetlands and intermittent streams; pre and post development analysis of impervious surface effects; and pre and post development watercourse sediment loads.

Stormwater modeling is to take into account the anticipated effects of climate change (increased frequency and intensity of storm events).

E. Liaise with provincial and federal representatives to determine if any regulations or guidelines may affect the study outcome.

F. Prepare a draft preliminary report for each study area with recommended water quality objectives for key receiving watercourses. Each report is to explain the criteria for the recommendations and will be presented at a public meeting and at a meeting of Regional Council for an endorsement of the recommendations. A separate public meeting will be scheduled for each watershed study and it should be assumed that separate presentations to Council will be required. Following each presentation at the public meeting, the Proponent will be expected to respond to questions arising and consider revisions based on the comments received which are to be incorporated into the final preliminary report to Council.

G. Prepare a draft final report for each study area which addresses the applicable matters identified under Policy E-17. A presentation based on this report will be presented at a public meeting (one for each watershed. The Proponent will be expected to respond to questions and will consider revisions to the final report which is then to be presented to Regional Council, or an alternate body of HRM Council as designated by HRM staff.